

**DENON**  
*PROFESSIONAL*

**DN-500CB**

**Serial Command Protocol Guide**  
English

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## Introduction

Thank you for purchasing the DN-500CB. At Denon Professional, performance and reliability mean as much to us as they do to you. That's why we design our equipment with only one thing in mind—to make your performance the best it can be.

## Support

For the latest information about this product (documentation, technical specifications, system requirements, compatibility information, etc.) and product registration, visit [denonpro.com](http://denonpro.com).

For additional product support, visit [denonpro.com/support](http://denonpro.com/support).

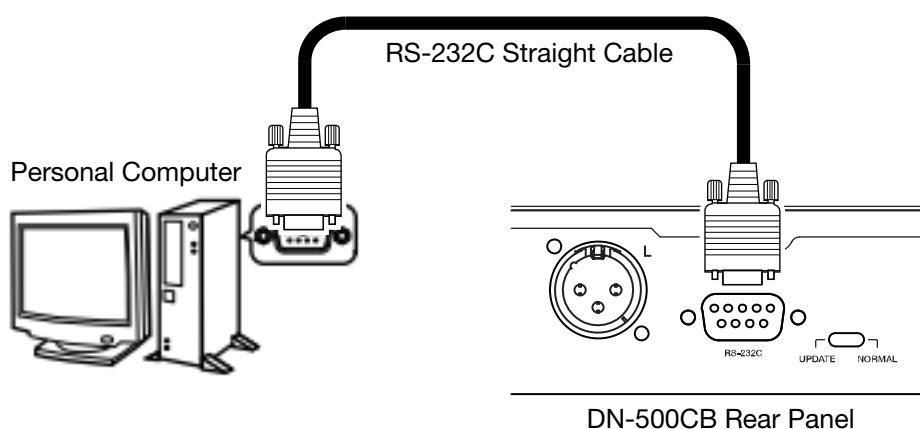
## General Overview

With RS-232C serial remote control, a “host” machine such as a PC can be used to operate your DN-500CB. Throughout this document, the equipment used to control DN-500CB will be called the **host**.

To learn more about the different types of serial communication and the code structure it requires, see the [Communication Protocol](#) section that starts on the next page. To view the complete list of serial command codes, see the [Control Command Codes](#) and [Status Request Command Codes/Status Information Codes](#) sections later in this manual.

## Connecting the Host to DN-500CB

For serial remote control, you must first connect the host to your DN-500CB. Use an RS-232C Straight Cable (9-Pin D-Sub Male) to connect the RS-232C input on the rear panel of your DN-500CB to the corresponding input on the host. Make sure that the host is running appropriate software for serial communication.



## Communication Protocol

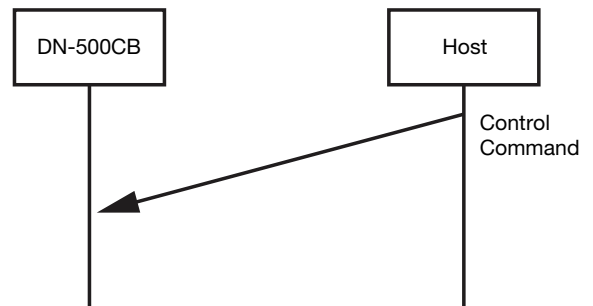
### Types of Serial Communication

Three types of serial communication can be transmitted between the host and DN-500CB:

1. Control commands sent to DN-500CB from the host

You can use control commands to make DN-500CB perform a desired function (such as playing or skipping a track).

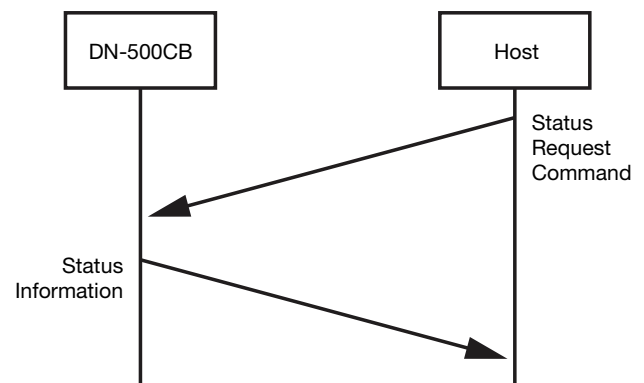
When DN-500CB receives a control command from the host, DN-500CB executes the command.



2. Status request commands sent to DN-500CB from the host

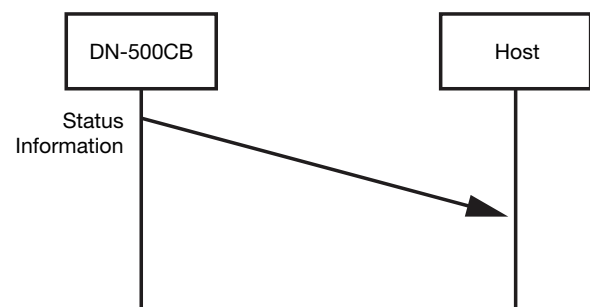
You can use a status request command to determine the current state of one of DN-500CB's components (such as whether there is a disc in the CD slot, how many tracks are in the current tracklist, etc.).

When DN-500CB receives a status request command from the host, DN-500CB answers the host with the requested status information.



3. Status information automatically sent to the host when a change is made from DN-500CB

When a change to DN-500CB is made from the device itself, DN-500CB automatically sends status information to the host.



## Structure of the Codes

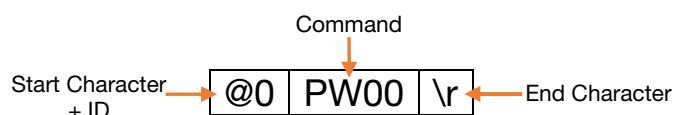
Serial communication between the host and DN-500CB uses ASCII Code from 0x20 to 0x7F.

All control command codes, status request command codes, and status information codes require three components that form a “packet.” In order, the components are the **start character + ID**, the **command**, and the **end character** (0x0D):

1. Start Character + ID: @ (0x40) + 0 (0x30)
2. Command: some letters and/or numbers that stand for a controllable feature of DN-500CB
3. End Character: \r (0x0D)

The required start character/ID and end character are the same in all codes, whereas the command portion varies with each code.

For example, the full control command code that the host would use to power on DN-500CB would be **@0PW00\r**:



## Rules on Transmitting Command Codes

- When DN-500CB receives a control command or status request command from the host, DN-500CB should respond within 300 ms.
- When DN-500CB successfully executes a command that it receives from the host, DN-500CB sends an ACK signal (0x06) to the host (as well as the status information code in the case of a status request command).
- If DN-500CB receives an unknown command from the host or if a received command fails for some other reason, DN-500CB will send a NACK signal (0x15) to the host.
- When sending consecutive commands from the host, do not send the second command until DN-500CB has answered the first with the ACK (0x06) or NACK (0x15) signal. If the second command is sent before the ACK (0x06) or NACK (0x15) signal is received, DN-500CB will send the “Busy” status information code (**@0BDERBUSY**) to the host.
- If DN-500CB does not receive a command that the host sent within 300 ms, the host will automatically send the same command up to two additional times. If DN-500CB still does not receive the command after the second automatic attempt, the process will timeout, and the host will send the end character to DN-500CB.
- Do not send a second status request command from the host until DN-500CB has responded to the first.
- When sending a command to DN-500CB from the host, make sure that no longer than 5 ms passes between entering each character in the command code.
- Wait at least one second after sending the Power On command before sending the next command.
- When status information is automatically sent to the host after a change to DN-500CB is made from the device itself, the host will send an ACK (0x06) signal to DN-500CB. If DN-500CB does not receive the ACK signal within 300 ms, it will automatically send the status information to the host again. If DN-500CB then fails to receive the ACK (0x06) signal again, the process will timeout.

## Control Command Codes

| Control Commands<br>(Host → DN-500CB) |                         |              |  |
|---------------------------------------|-------------------------|--------------|--|
| CATEGORY                              | CONTENTS                | CODE         | DESCRIPTION  |
| <b>Power</b>                          | Power On                | @0PW00       | Powers on DN-500CB   |
|                                       | Power Off               | @0PW01       | Powers off DN-500CB  |
| <b>Disc Drive</b>                     | Eject                   | @0PCDTRYOP   | Ejects the disc from the CD slot   |
| <b>Track Playback</b>                 | Play                    | @02353       | Plays the current track  |
|                                       | Pause                   | @02348       | Pauses the current track   |
|                                       | Stop                    | @02354       | Stops the current track  |
|                                       | Turn Mute On            | @0mt00       | Mutes audio for the current track  |
|                                       | Turn Mute Off           | @0mt01       | Unmutes audio for the current track  |
| <b>Track Selection</b>                | Restart/Previous Track  | @02333       | Restarts the current track or skips to the previous track in the tracklist                         |
|                                       | Next Track              | @02332       | Skips to the next track in the tracklist   |
|                                       | Select Track Number     | @0Trnnnn     | Selects the track corresponding to the entered number, where <i>nnnn</i> (number) = 0001 - 9999    |
| <b>Track Searching</b>                | Rewind                  | @0PCSLSR     | Rewinds the current track  |
|                                       | Fast Forward            | @0PCSLSF     | Fast forwards the current track  |
| <b>Number Buttons</b>                 | Enter Number            | @0PCTKEY $n$ | Selects the track corresponding to the entered number, where $n$ (number) = 0 - 9                  |
| <b>Time Display</b>                   | Display Elapsed         | @0PCTMDEL    | Sets the Display screen to show the amount of time that has passed in the currently selected track |
|                                       | Display Total Elapsed   | @0PCTMDTL    | Sets the Display screen to show the amount of time that has passed in the current tracklist        |
|                                       | Display Total Remaining | @0PCTMDTR    | Sets the Display screen to show the amount of time remaining in the current tracklist              |

## Status Request Command Codes/Status Information Codes

| Status Request Commands<br>(Host → DN-500CB) |       | Status Information<br>(DN-500CB → Host) |             | DESCRIPTION  |
|--|-------|---|-------------|--|
| REQUEST                                      | CODE  | ANSWER                                  | CODE        |  |
| Power Status                                 | @0?PW | On                                      | ACK         | The power is on  |
|  |       | Off                                     | No answer   | The power is off   |
| CD Status                                    | @0?CD | No Disc                                 | @0CDNC      | There is no disc in the CD slot  |
|  |       | Disc In                                 | @0CDCI      | There is a disc in the CD slot   |
| Track Status                                 | @0?ST | Playing                                 | @0STPL      | The current track is playing   |
|  |       | Paused                                  | @0STPP      | The current track is paused  |
|  |       | Rewinding                               | @0STDVFR    | The current track is rewinding   |
|  |       | Fast Forwarding                         | @0STDVFF    | The current track is fast forwarding   |
| Track Number                                 | @0?Tr | Number of the current track             | @0Trnnnn    | The current track's number within the tracklist, where <i>nnnn</i> (number) = 0000 - 9999; <i>nnnn</i> = UNKN if the track number is undetectable                  |
| Tracklist Size                               | @0?Tt | Total number of tracks                  | @0Ttnnnn    | The total number of tracks in the current tracklist, where <i>nnnn</i> (number) = 0000 - 9999; <i>nnnn</i> = UNKN if the total number of tracks is undetectable    |
| Track Title                                  | @0?ti | Title of the current track              | @0tixxx     | The title of the current track, where <i>xxx</i> = up to 64 characters of the title  |
| Track Artist                                 | @0?at | Artist on the current track             | @0atxxx     | The name of the artist on current track, where <i>xxx</i> = up to 64 characters of the artist name   |
| Album Title                                  | @0?al | Album for the current track             | @0alxxx     | The name of the album that the current track is on, where <i>xxx</i> = up to 64 characters of the album name   |
| Track Time                                   | @0?tl | Time position of the current track      | @0tIMMMSS   | The time position of the current track, where <i>MMM</i> (minutes) = 000 - 999 and <i>SS</i> (seconds) = 00 - 59   |
| Elapsed Track Time                           | @0?ET | Time elapsed in the track               | @0EThhhmmss | The amount of time that has elapsed in the current track, where <i>hhh</i> (hours) = 000 - 999, <i>mm</i> (minutes) = 00 - 59, and <i>ss</i> (seconds) = 00 - 59   |
| Remaining Track Time                         | @0?RM | Time remaining in the track             | @0RMhhhmmss | The amount of time remaining before the current track ends, where <i>hhh</i> (hours) = 000 - 999, <i>mm</i> (minutes) = 00 - 59, and <i>ss</i> (seconds) = 00 - 59 |

## Appendix

### RS-232C Specifications

|                        |                            |                    |
|------------------------|----------------------------|--------------------|
| <b>Connector</b>       | 9-Pin D-sub Female         |                    |
| <b>Mode</b>            | Full Duplex                |                    |
| <b>Transfer Rate</b>   | 9600, 38400, or 115200 bps |                    |
| <b>Data Length</b>     | 8 bits                     |                    |
| <b>Parity</b>          | None                       |                    |
| <b>Start Bit</b>       | 1 bit                      |                    |
| <b>Stop Bit</b>        | 1 bit                      |                    |
| <b>Flow Control</b>    | None                       |                    |
| <b>Pin Arrangement</b> | <b>Pin Number</b>          | <b>Signal Name</b> |
|                        | 1                          | Ground             |
|                        | 6                          | NC                 |
|                        | 2                          | TxD                |
|                        | 7                          | RTS*               |
|                        | 3                          | RxD                |
|                        | 8                          | NC                 |
|                        | 4                          | NC                 |
|                        | 9                          | NC                 |
| 5                      | S. Ground                  |                    |

\*5 V / 500 mA power supply can be used for RTS.

### Trademarks & Licenses

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